A UNIQUE SPECIES OF THE GENUS HYPOGASTRURA FROM NORTH CAROLINA (COLLEMBOLA, PODURIDAE)[1]

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For a number of seasons R. C. Graves has collected animal specimens in shelf fungi in the Highlands, Macon County, North Carolina area. Here the rainfall is one of the highest in eastern North America and the maximum conditions prevail for both fungi, Collembola and other organisms. Among the Collembola collections he sent me for examination I discovered one of the most interesting *Hypogastrura* species I have ever encountered in collections from across the United States. Because of the unique morphological characters, and in as much as the fauna of many ecological niches and interlocking plant and animal associations, as the above, are being studied, this form is being described to make the name available for faunal lists and associated data, and especially for the use of Dr. Graves in his study. Fifteen specimens (1 holotype, 14 paratypes) were examined by me and no significant variations were noted, especially morphological ones. The anal horn structures and chitin coloration of both horn and base appeared constant.

The author takes pleasure in naming this species for R. C. Graves who has collected copiously in this high rainfall area and contributed much to the study of shelf-fungi fauna.

Hypogastrura gravesi NEW SPECIES, Wray

Length up to 1.0 mm. Color dirty white-background with purplish pigment distributed in specks and blotches over whole body; head more heavily purplish; with general Hypogastrurinae characters. Antennae equal to head in longitudinal length; proportional length of segments as: 3: 3: 4: 4 (fig. 1). Organ of 3rd antennal segment consists of 2 small thick bent sensory rods behind an integumental

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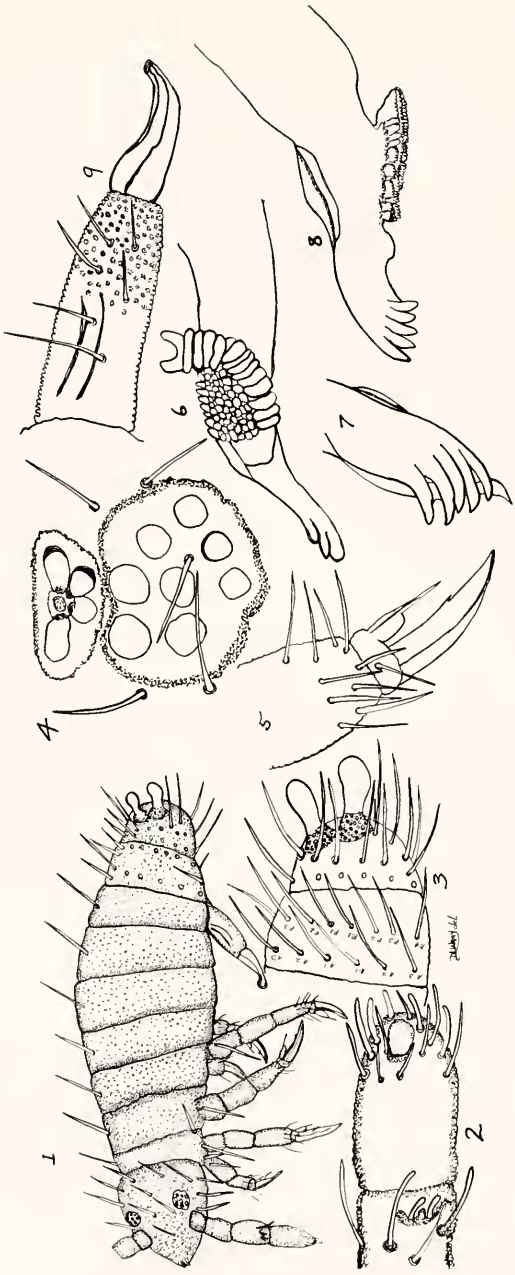

FIGURES 1—9. FIG. 1, adult; FIG. 2, antennal segments 3 and 4 showing 3rd antennal organ and terminal bulb; FIG. 3, anal spines; FIG. 4, eyes and associated setae; FIG. 5, unguis and unguiculus; FIGS. 6, 7, 8, mouthparts; FIG. 9, dens-mucro.

fold and with a much longer bent ancillary sense rod laterally (fig. 2). Fourth antennal segment with a thickened sub-terminal sensory bulb; and with scattered long thick sensory rods laterally and forward to the terminal bulb (fig. 2). Eyes (fig. 4) 8 on a black patch on each side of head; post-antennal organ consists of 4 peripheral sensory lobes and a central "nebenhöcker", the two anterior somewhat longer and larger than the 2 posterior lobes; P.A.O. situated in an integumental depression just anterior to right exterior eye. Mouthparts for chewing, mandibles with distinct molar surfaces (figs. 6, 8); maxilla (fig. 7) ending in curved, pointed finger-like teeth.

All body segments normal for genus Hypogastrura (fig. 1). Unguis (fig. 5) slightly curved, long, and with one tooth on inner margin about a third from tip; unguiculus (fig. 5) broadly lamellate basally and ending in a slender terminal spine which reaches to unguial tooth. No outstanding or knobbed-enlarged tenent hairs noticeable on specimens examined. Manubrium to dens to mucro as: 25: 20: 12 (fig. 9). Dentes stout, tapering slightly distally, with one long, outstanding basal seta and three others in line toward mucro as seen laterally (fig. 9). Mucro (fig. 9) stout basally and strongly curved distally ending in a narrow spoon-like tip.

Anal spines (fig. 3) two, of unusual morphological design; large, long as hind unguis, or about as long as one half the width of the tergum of sixth abdominal segment; both terminating in enlarged bulbous structures, basially contiguous with enlarged bases showing integumental structures larger than on other body segments (fig. 3). Anal horns straw-yellowish color to chitin. Clothing (figs. 1 and 3) consists of short sparse setae intermingled with one long outstanding curved seta on each segment as shown in dorsal pattern (fig. 1). The chaetotaxy of the dorsum of abdominal segments 5 and 6 is shown in figure 3. Two major rows of setae across dorsum of each segment; anterior (A-1), posterior (P-1).

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PARTIAL KEY TO RELATED SPECIES OF HYPOGASTRURA

1— Large conical dorsal dental teeth present 2
——Large conical dorsal dental teeth absent 4
2— Large capitate serrate setae on body, at least on dorsum—nothus Macnamara.
——Large capitate, serrate setae absent on body, (except pair near anal horns) . 3
3— With minute and very short pointed anal horns ..... nivicolus Fitch.
——With larger, pointed, anal horns subequal to hind unguis in length harveyi Folsom.

4— Two or three knobbed tenent hairs on each tibiotarsus **macgillivrayi**-Folsom.
——One knobbed tenent hair on each tibiotarsus, or none present 5
5— Capitate, serrate, stout, setae present on dorsum of body . . . . **packardi** Folsom.
——Capitate, serrate, stout, erect, setae absent on body 6
6— Murco with large, triangular external lamella, and bluntly rounded **armatus** Nicolet.
——Mucro without large, triangular external lamella, and not so bluntly rounded . . 7
7— Mucro short, heavy and blunt; large dorsal lamella wanting (medium in width and size) . . . . . **packardi** var. **dentatus** Folsom.
——Mucro long and with broad dorsal lamella extending nearly to tip of mucro . . . 8
8— Anal horns terminally enlarged and bulbous; mucro elongated, tip curved and spoon-shaped; no knobbed tenent hairs discernible **gravesi** Wray, new species.
——Anal horns smaller, terminally pointed; end of mucro straight or hooked 9
9— Mucro end straight; anal horns only half the unguis in length, one long tenent hair . . . . . **copiosus** Folsom.
——Mucro ends hooked or strongly turned up; anal horns shorter, only a fourth of length of hind unguis; 1 long, knobbed tenent hair ———— **maturus** Folsum.

This species is closest to *H. armata* Nicolet (a cosmopolitan species) in shape of mucro, unguis, unguicular tooth on inner margin, shape of unguiculus, and knobbed tenent hairs not present. It differs however, in post antennal organ shape, anal horn structure, and body chaetotaxy. It does not have the eversible sac between the 3rd and 4th antennal segments. The structure of the anal horns places it closest to *Hypogastrura luteospina* Stach described from Poland in 1949 by Stach, and taken in mushrooms in wet shaded forest areas. It differs however, from the later species in anal horn shape, unguicular structures, chaetotaxy of posterior tergites, P.A.O., and in other characters.

Literature cited

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2.0107. A unique species of the genus Hypogastrura from North Carolina (Collembola, Poduridae).

Abstract.—The new species, *Hypogastrura gravesi* Wray is more closely related to the cosmopolitan species *H. armata* Nicolet and the European *Hypogastrura* (*Ceratophysella*) *luteospina* Stach, the most unique character being the enlarged bulbous posterior anal horns. The type locality is Highlands, Macon County, North Carolina, collected from shelf fungi.—David L. Wray, Dept. of Agriculture, Entomology Division, P.O. Box 27647, Raleigh, N.C. 27611.

Descriptors: Collembola; Poduridae; *Hypogastrura gravesi* new species, description; *Hypogastrura*, key to some species; North Carolina, Collembola; springtail.